PROCEEDINGS

OF THE

AMERICAN PHILOSOPHICAL SOCIETY.

VOL. 1. APRIL, MAY, JUNE, JULY & AUG. 1839. No. 7.

Stated Meeting, April 5.

Present, nineteen members.

Mr. DU PONCEAU, President, in the Chair.

The following donations were received:—

FOR THE LIBRARY.

Diccionario de la Lengua Castellana por la Academia Española. Eighth edition. Madrid, 1837.—*From the Academy.*

Derrotero de las Islas Antillas de las Costas de Tierra-Firme, y de las del Seno Mejicano. Third edition. Madrid, 1837.—*From the Hydrographical Depôt of the Spanish Navy.*

Coleccion de los Viages y Descubrimientos que hicieron por mar los Españoles desde fines del Siglo xv. Por Don Martin Fernandez de Navarrete. Vols. I., II., III., IV., & V. Madrid, 1825 to 1837.—*From the same.*

Discurso leido à la Academia de la Historia, por su Director el Excmo Señor D. Martin Fernandez de Navarrete, en Junta de 24 de Noviembre, de 1837. Madrid, 1838.—*From the Author.*

Essays on unexplained Phenomena. By Graham Hutchinson. Glasgow, 1838.—*From the Author.*

Observations on the Justificative Memorial of the Court of London. Translated from the French original, by Peter S. Du Ponceau. Philadelphia, 1781.—*From the Translator.*

An Alphabetical Catalogue of Shells, Fossils, Minerals, and Zoophites, in the Cabinet of Joseph Sullivant. Columbus, Ohio, 1838.—*From Mr. Sullivant.*

The Magazine of Natural History. New Series. Edited by Edward Charlesworth. Vol. II., No. 25. London, 1839.—*From the Editor.*

Communication relative to the West Branch and Alleghany Canal. By B. Aycrigg. Harrisburg, 1839.—*From the Author.*

The American Medical Library and Intelligencer. By Robley Dunglison, M. D. Vol. II. No. 24, and Vol. III., No. 1. Philadelphia, 1839.—*From the Editor.*

The Augustan Age. A Lecture before the Athenian Institute. By Charles D. Meigs, M. D. Philadelphia, 1839.—*From the Author.*

Statistical Tables, exhibiting the Condition and Products of certain branches of Industry in Massachusetts, for the year ending April 1, 1837. By John P. Bigelow. Boston, 1838.—*From Mr. Elliot Cresson.*

Real Museo Borbonico. Nos. 37 to 47. Naples, 1833 to 1836.—*From the King of the Two Sicilies.*

Vocabolario Universale della Lingua Italiana. Nos. 31 to 35. Naples, 1837 and 1838.—*From the Chevalier Morelli.*

The Committee to whom was referred a paper, entitled "Contributions to the Geology of the Tertiary Formations of Virginia. Second Series. By Professor William B. Rogers, and Professor Henry D. Rogers," reported in favour of the publication of the Memoir, which was ordered accordingly.

The object of this communication is to describe the Geology of the Peninsula embraced between the Potomac and Rappahannock rivers, extending from the Chesapeake Bay to the limit of tide water, near Fredericksburg.

This area consists almost exclusively of the two great divisions of the Tertiary Deposites of Virginia, namely, the *Eocene* and *Miocene* formations.

The paper commences with a sketch of the topographical features of the peninsula, making allusion, among other points, to the interesting *terraced* configuration of the land bordering the valleys of the two rivers. It then proceeds to delineate the boundaries of the *Eocene* and *Miocene* formations. The *Eocene* is shown to occupy the western part of the peninsula, overlapping at its western edge the secondary sandstone of Fredericksburg, and extending eastward with a very gentle eastern dip beneath the overlying Miocene deposites,

until it finally disappears below the level of the tide near the mouth of Chingoteague creek on the Rappahannock, and Mathias's Point on the Potomac. The *Miocene* spreads eastward from the line connecting these two localities to the termination of the peninsula; while some of its lower beds extend west of the same line into the Eocene district, where they are confined, however, to the highest portions of the land.

After offering numerous details relating to the range and limits of these two divisions of the Tertiary Deposites, the paper treats in the next place of the arrangement and composition of the *Miocene* strata, which are shown to possess a close general analogy in these respects to the *Miocene* beds of the peninsula of the York and James rivers, described in a former communication. The two most interesting points of agreement are the occurrence of the blue marls low down in the series, and the presence of the thin band of ferruginous rock separating the *Miocene* from the overlying *diluvium*.

In general the blue marl at the base of the Miocene, is the most replete in fossils, though towards the eastern extremity of the peninsula, shells, &c., abound in the upper sands and clays. Usually the *upper* beds of the *Miocene* in this district are destitute of fossils, though full of their casts and impressions.

These strata consist generally of light coloured sandy clays, distinguished by a sulphurous smell, and an acid and styptic flavour. Carbonate of lime is not abundant, but the sulphate of lime occurs sometimes in valuable proportion. Sulphate of iron, sulphate of alumina, free sulphuric acid, sulphur, and even an appreciable amount of sulphate of magnesia are also met with.

The fossil impressions in these beds are beautifully distinct, and appertain to all the species of shells which are found in perfect condition in the subjacent strata. In the blue clayey marl beneath, there often occurs a notable proportion of green sand, which is also found in some of the other Miocene strata, mixed pretty largely with common sand and clay, in beds destitute of fossils.

The paper treats in detail of many of the more interesting localities in the *Miocene* district, describing the stratification, and presenting evidence of the relative fertilizing agency of the several beds.

The fossil species which characterize the *Miocene* strata, are next enumerated.

In the next section, an account is given of the arrangement and composition of the *Eocene* strata of the peninsula.

In general, the lowest bed of the series is a dark greenish-blue mass, composed of clay, fine sand, and a little green sand; while above it, the strata are of various shades, yellow greenish-gray, and brown. Little uniformity prevails in their arrangement at different localities.

A thin band of ferruginous gravel frequently overlies the *Eocene* strata, and forms a distinct line of demarcation between them and the bottom of the *Miocene*.

The stratification of the Eocene at various localities is exhibited in detail, and the characteristic fossils specified, while the curious chemical changes which these have undergone, are also discussed.

Professor Bache presented the printed number of the Society's proceedings for the past three months, No. 6.

Dr. Hays stated that he had received through a friend some of the vaccine virus, recently obtained by Mr. Estlin, of Bristol, from the cow, and had used it with the most satisfactory results. He exhibited a scab, which presented all the characters described by Jenner, as appertaining to the genuine vaccine scab.

Stated Meeting, April 19.

Present, thirty-eight members.

Mr. Du Ponceau, President, in the Chair.

The following donations were received:—

FOR THE LIBRARY.

Mémoires de l'Académie Impériale des Sciences de Saint-Pétersbourg. VIme. Série. Sciences Mathématiques, Physiques et Naturelles. Vol. IV. Première Partie: Sciences Mathématiques et Physiques. Vol. II. Parts first and second. St. Petersburg, 1838.—*From the Academy.*

Mémoires de l'Académie Impériale des Sciences de Saint-Pétersbourg. VIme. Série. Sciences Mathématiques, Physiques et

Naturelles. Vol. IV. Seconde Partie: Sciences Naturelles. Vol. II. St. Petersburg, 1838.—*From the same.*

Mémoires de l'Académie Impériale des Sciences de Saint-Pétersbourg. VIme. Série. Sciences Politiques, Histoire, Philologie. Vol. IV. Part third. St. Petersburg, 1838.—*From the same.*

Mémoires présentées à l'Académie Impériale des Sciences de Saint-Pétersbourg par divers Savans, et lues dans ses Assemblées. Vol. III. Parts third to sixth, and Vol. IV. Parts first and second. St. Petersburg, 1837.—*From the same.*

Recueil des Actes de la Séance Publique de l'Académie Impériale des Sciences de Saint-Pétersbourg tenue le 29 Décembre, 1837. St. Petersburg, 1838.—*From the same.*

Second Report on the Agriculture of Massachusetts. By Henry Colman, Commissioner for the Agricultural Survey of the State. County of Berkshire, 1838. Boston, 1839.—*From the Author.*

Copy of the Acts incorporating the Sandusky, Toledo, and Michigan City Rail Road Company, with the Report of the Survey of the Road. By John Hopkins, Esq. Also, the Report of the Survey of the Buffalo and Mississippi Rail Road, through the State of Indiana. By James Seymour, Esq. To which is added, the Circular of the Directors, and the Company's Charter. Toledo, 1839.—*From Mr. Elisha Whittlesey.*

The Charter and By-Laws of the Ohio Life Insurance and Trust Company. Cincinnati, 1838.—*From the same.*

An Essay on the Development and Modifications of the External Organs of Plants, &c. By William Darlington, M. D. West Chester, 1839.—*From the Author.*

O Auxiliador da Industria Nacional, ou Collecção de Memorias e Noticias interessantes aos Faziendeiros, Fabricantes, etc. Periodico Mensal publicado pela Sociedade Auxiliadora da Industria Nacional, estabelecida no Rio de Janeiro. VIth. Year. No. 7. Rio Janeiro, 1838.—*From the Society.*

Reports and other Documents relating to the State Lunatic Hospital, at Worcester, Mass. Printed by order of the Senate. Boston, 1837.—*From Mr. I. P. Davis.*

Draft of a revised Common School Law, and of a Law relative to the Preparation of Common School Teachers; with explanatory Remarks, and a set of District Regulations. Prepared by Thomas H. Burrowes, Superintendent. Harrisburg, 1839.—*From Mr. R. Conyngham.*

Report on Elementary Public Instruction in Europe, made to the thirty-sixth General Assembly of the State of Ohio, December 19, 1837. By C. E. Stowe. Reprinted by order of the House of Representatives of Pennsylvania. Harrisburg, 1838.—*From the same.*

Berichten über die Verhandlungen der Naturforschenden Gesellschaft in Basel, vom August, 1834, bis Juli, 1838. Nos. 1, 2, and 3. Basel, 1835 to 1838.—*From L. de Wette.*

Annual Report of the Geologist of Maryland, 1838. Annapolis, 1839.—*From the Author.*

A Further Report on the Survey of a Rail Road from Chambersburg to Pittsburg. By Charles De Hass, Engineer. Harrisburg, 1838.—*From Mr. R. Conyngham.*

Geology of Upper Illinois. By Charles U. Shepard, M. D. New Haven, 1838.—*From Mr. E. Whittlesey.*

First Report of Edward Miller, Engineer in Chief of the Sunbury and Erie Rail Road. Philadelphia, 1839.—*From Mr. F. Fraley.*

The Committee of Publication, reported the publication of Part Second, Vol. VI., of the Society's Transactions.

Professor Bache communicated at the request of the Committee on the Observatory, the following translation of a letter addressed to him by Professor Encke, Director of the Observatory of Berlin.

The nature of the operations of an Observatory must depend more upon the individual taste and qualifications of the Director than those of any other scientific establishment. There is still so much to be done in every department of Astronomy, in any one of which there is sufficient employment, that if the Director shows a particular disposition for certain lines of research, it would be most profitable for science that he should be allowed to follow them, and not be tied down to other observations. It would be best, therefore, that the Director should be allowed to regulate his own establishment.

Large Observatories, like those of Greenwich, Königsberg, and Dorpat, require, in the present state of science, large telescopes, the art of dividing having been carried so far, that small instruments will not answer. The necessity for large telescopes for the meridian instruments, as well as for other uses, renders such an establishment very costly, and requires that it shall be independent of others. It

appears not to be the intention, at present, to erect such an Observatory in the United States, and details in regard to it are therefore unnecessary.

But smaller Observatories may also be useful to science, especially for geographical purposes. Such a one, for example, as would be furnished by a room with a solid foundation, connected with a second having a free horizon. The first to have cuts north and south and east and west, the second to have a turning dome. The following named instruments would be suitable for such an Observatory.

1. A meridian circle with a 42 inch telescope and 20 inch circle, - - -	1,000	Rix Dolls.
2. A telescope of 72 inches focal length, -	900	„
3. An astronomical clock, - -	400	„
4. A chronometer, - - -	500	„
5. Small transit instrument, - -	350	„
6. Small telescopes, barometers, thermometers, &c., a theodolite, &c. - -	750	„
	3,900	„
	or about	$3,000.

A small Observatory would thus be furnished for about three thousand dollars.

Determinations of the places of stars and planets, and even of the asteroids may be made with the circle as far as the power of the telescope permits. Director Hansen, at Seeberg, and Professor Schwerdt, at Spire, have made excellent observations with a similar instrument. Observations of moon culminating stars for longitude may be also made with it.

Observations of more difficult objects, except perhaps the nearest double stars, of comets, for the exterior of the planets, &c., may be made with the larger telescope.

The small transit instrument, placed east and west, will give the latitude within limits depending upon the accuracy to which the declinations of the stars is determined, and in conjunction with the chronometer, will serve to determine the geographical positions of places which may be selected. For longitude, observations are made of the moon culminating stars, which are observed at the same time with the meridian circle. For latitude the transit is placed east and west.

The Altona Observatory may serve as a model of such a small

Observatory, and the yearly journeys of the Russian Astronomers from Dorpat, as models for the use of the instruments in determining geographical positions. The observations of Professor Schwerdt, of Spire, will be found useful in the application of the meridian circle.

Such a small Observatory will be well adapted to form observers; as the art of handling instruments so as to obtain accurate results is only to be acquired by practice.

Dr. Patterson made the following verbal communication:—

That the use of the wax tablet written on with an iron stylus, as practised by the ancient Romans, had been tried, for the first time, this day, at the Pennsylvania Institution for the Instruction of the Blind, and that the success had been perfectly satisfactory. The blind read, with ease, the words written, traced geometrical figures, &c. It is confidently believed that the Roman tablet will prove of great importance in the instruction of the blind.

Professor H. D. Rogers made a verbal communication, in which he called the attention of the Society to a new compound of platinum, discovered by himself and his friend, Martin H. Boyé; upon the further investigation of which they are at present occupied.

It is a well characterized salt, composed of the deutochloride of platinum, and the binoxide of nitrogen, in which the former may be conceived, in accordance with the views of Professor Hare, to act the part of an acid, while the binoxide of nitrogen is in the relation of a base. It is of a bright gamboge yellow, is distinctly crystalline, though, in consequence of the minuteness of the crystals, their form has not been determined. It is highly deliquescent, absorbing water at ordinary temperatures, with great avidity, from the atmosphere.

It is rapidly decomposed by the mere addition of water, which causes an active effervescence; the binoxide of nitrogen being copiously evolved, and the deutochloride of platinum remaining in solution.

This interesting compound is best procured by evaporating a solution of platinum in *aqua regia* nearly to dryness, and then adding a large excess of fresh nitro-muriatic acid by small quantities at a time. The compound may thus be readily procured by filtering and pressing the powder between folds of bibulous paper. Should the concentration of the liquid be carried too far, it is requisite to add a little

water, just sufficient in quantity to preserve the mass in a semifluid condition, and to prevent the precipitation of any deutochloride of platinum.

Specimens of the salt were exhibited, together with the apparatus employed in the qualitative examination of the compound, the constitution of which was made manifest by proper chemical re-agents.

Dr. Patterson called up the amendment to the by-laws proposed by him on the 15th of March last, and in regard to which due notice had been given. The amendment was adopted as follows:—

If any member shall pay into the hands of the treasurer the sum of fifty dollars, he shall thenceforward be exempted from all annual contributions.

The following candidates were elected Members of the Society:—

Humphrey Lloyd, A. M., of Trinity College, Dublin.

J. K. Paulding, Secretary of the Navy of the United States.

John Ludlow, D. D. Provost of the University of Pennsylvania.

Benjamin W. Richards, of Philadelphia.

George W. Bethune, D. D. of Philadelphia.

George M. Justice, of Philadelphia.

Stated Meeting, May 3.

Present, twenty-two members.

Mr. Du Ponceau, President, in the Chair.

The following donations were received:—

FOR THE LIBRARY.

Memoirs of the Royal Astronomical Society. Vol. X. London, 1838.—*From the Society.*

Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce. During the session of 1837–8. Vol. LII. Part first. London, 1838.—*From the Society.*

Transactions of the Albany Institute. Vol. II. Nos. 3 and 4. Albany.—*From the Institute.*

Collections of the Rhode Island Historical Society. Vol. IV. Providence, 1838.—*From the Society.*

Elements of Civil Engineering: for the use of Students, and those who may be about to embark in the profession. By John Millington, Civil Engineer, &c. Philadelphia, 1839.—*From Mr. Judah Dobson.*

A Geographical, Commercial, and Agricultural View of the United States of America, forming a complete Emigrants' Directory, &c. By Daniel Blowe. Liverpool, 1820.—*From Mr. John Vaughan.*

Remarks on the Statistics and Political Institutions of the United States, with some Observations on the Ecclesiastical System of America, her Sources of Revenue, &c. By William G. Ouseley, Esq. Philadelphia, 1832.—*From the same.*

Sketches, Historical and Topographical, of the Floridas. By James Grant Forbes. New York.—*From the same.*

Remarks during a Journey through North America, in the years 1819, 1820, and 1821. By Adam Hodgson, Esq. New York, 1823.—*From the same.*

Statistics of South Carolina, including a View of its Natural, Civil, and Military History, general and particular. By Robert Miles. Charleston, 1826.—*From the same.*

Correspondencia que ha Mediado entre la Legacion Extraordinaria de Mexico y el Departamento de Estado de los Estados Unidos sobre el Paso del Sabina por las Tropaz que mandaba el General Gaines. Philadelphia, 1836.—*From Mr. Gorostiza.*

Tables of the Self-registering Anemometer and Rain Gauge, with drawings, and a description. By Mr. Follett Ostler.—*From Mr. G. M. Justice.*

A Peep at China in Mr. Dunn's Chinese Collection; with Miscellaneous Notices relating to the Institutions and Customs of the Chinese, and our Commercial Intercourse with them. By E. C. Wines. Philadelphia, 1839.—*From Mr. Nathan Dunn.*

FOR THE CABINET.

Models of a regular dodecahedron and of a triangular pyramid, in which the planes of cleavage upon the solid angles are shown, executed in mica. By Professor Stephen Alexander, of Princeton. *From the Maker.*

Professor Bache called the attention of the Society to the donation of transparent models of crystals, presented to the Cabinet by Professor Alexander.

He stated that these models had all the advantages of those made from glass, with greater convenience in the construction of them. The thin plates of mica are readily marked with a sharp instrument, and easily cut. The parts are put together with diamond cement, it having been found that this is a much better method of connecting the pieces composing the model, than by cutting the sheets partly through and using the mica as a hinge, which renders the sheets liable to split. The forms resulting from the cleavage of crystals, &c., may be represented in these models as in those of glass.

Dr. Hays made a verbal communication relative to the catoptric examination of the eye, as a means of distinguishing the morbid conditions of the transparent tissues of that organ.

He stated that when a lighted candle is held before an eye, the pupil of which is dilated, and in which there is no obscurity of the transparent tissues, three distinct images of the flame is visible; two upright and one inverted, the latter appearing between the two former.

Experiments made to determine the causes of these reflected images, and the changes which occur in their number, position, &c. have shown that if a light be placed before the convex face of a single watch glass, or of several of them superimposed, one or more upright images of the flame will be seen, according to the number of glasses employed.* Now in the eye there are two superimposed convex surfaces, viz.—1st. the cornea; and 2d. the anterior capsule of the crystalline lens. Thus the formation of the two upright images is explained. Again, if a light be placed before the concave surface of a watch glass, an inverted image is seen. Such a surface exists in the eye, in the posterior capsule of the lens; and thus the third image is accounted for.

M. Sanson, a distinguished French surgeon, has taken advantage of the above facts, to distinguish cataract from amaurosis, and has

* To be strictly accurate, it should be said that each of these images is double, for one is reflected from each surface of the glass, and these images are the more distinctly double, the thicker the glass.

been enabled to determine by this means some cases of supposed amaurosis to be in fact cataract, and has treated them successfully by operation.

Dr. Mackenzie, an eminent ophthalmologist of Glasgow, has also employed this means to determine the condition of the eye in glaucoma. Dr. Hays remarked that he had resorted to the catoptric examination of the eye in many cases, and believed that it would prove as valuable a means of diagnosis in some of the diseases of the eye, as auscultation is in those of the chest.

Dr. Hays exhibited and explained several models, designed and constructed by Dr. John Neill, resident surgeon at Wills' Hospital, for the purpose of illustrating the catoptric phenomena just explained.

Dr. Patterson communicated verbally a method of using thin sheets of lead by the blind, in writing, reading, and musical notation, invented by Mr. Joseph Saxton. The sheets of lead are three thousandths of an inch in thickness. Dr. Patterson presented specimens of the writing and musical notation.

Dr. Bache communicated the decease of Mr. George Pollok, a member of the Society, who died in April last.

Stated Meeting, May 17.

Present, twenty members.

Mr. Du Ponceau, President, in the Chair.

Letters were received from Mr. Thomas Townsend, and Mr. G. Riboni, and referred to committees.

The following donations were received:—

FOR THE LIBRARY.

Proceedings of the Committee of Agriculture and Commerce of the Royal Asiatic Society, from April, 1837, to November, 1838. London, 1837-38.—*From the Society.*

The Journal of the Royal Geographical Society of London. Vol. IX. Parts first and second. London, 1839.—*From the Society.*

Experimental Researches in Electricity. Eleventh, Twelfth, Thirteenth and Fourteenth series. By Michael Farady, Esq., D.C.L. London, 1838.—*From the Author.*

The History of the Navy of the United States of America. By J. Fenimore Cooper. Two Vols. Philadelphia, 1839.—*From the Author.*

A Memoir of the Life and Character of Philip Syng Physick, M.D. By J. Randolph, M. D. Philadelphia, 1839.—*From the Author.*

Experimental and Theoretical Researches in Electricity. First Memoir. By William Sturgeon, Esq. London, 1839.—*From the Author.*

Facts and Inquiries respecting the source of Epidemic. By T. Forster, M. B. London, 1832.—*From the Author.*

Observations on the Brumal Retreat of the Swallow. By Thomas Forster. London, 1817.—*From the Author.*

Third Annual Report on the Geological Survey of the State of Pennsylvania. By Henry D. Rogers, State Geologist. Harrisburg, 1839.—*From the Author.*

A Catalogue of the Shells arranged according to the Lamarckian System, together with descriptions of new or rare species, contained in the collection of John C. Jay, M.D. New York, 1839. *From the Author.*

Mécanique Céleste. By the Marquis de la Place. Translated, with a Commentary, by Nathaniel Bowditch, LL. D. Vol. IV. With a Memoir of the Translator, by his son, N. Ingersoll Bowditch. Boston, 1839.—*From the Children of the Translator.*

Report on the Variations of the Magnetic Intensity observed at different points on the Earth's Surface. By Major Edward Sabine, R.A. London, 1838.—*From the Author.*

Dr. Hare made the following verbal communication relative to the blasting of rocks, by the aid of galvanic ignition in firing the charge.

The Doctor called the attention of the Society to the fact, that he had, so long ago as the summer of 1831, demonstrated the safety, certainty, and facility, which would arise in rock-blasting, whether

under water or otherwise, from a resort to galvanic apparatus as the means of igniting the gunpowder employed. His efforts had been incited originally by those of a person named Shaw, who had procured a patent for employing mechanical electricity for the purpose; but who, finding that method of operating too precarious to be useful, had applied to Dr. Hare to acquire a knowledge of more effectual means. This led to the experiments of which the result has been published, both in the newspapers, and in the Journal of the Franklin Institute. The subject was now referred to, in consequence of the recent publication of analogous experiments by his friend, Professor Daniell, of King's College, London, who, in the case in point, no doubt as in that in which he had "*reinvented*" Dr. Hare's concentric blow pipe, was ignorant of the results previously obtained in this country. Professor Daniell had, in blasting, used the highly ingenious apparatus known as "*Daniell's sustaining battery*," the contrivance of which had done him great honour; but Dr. Hare conceived that however preferable might be a battery of that kind, in processes requiring a permanent current; for a transient energetic ignition, such, as is most suitable for blasting, the calorimotors which he had contrived, would be decidedly more efficacious.

Dr. Hare further communicated the results of his recent experiments to obtain calcium, as follows:—

By igniting an equivalent weight of lime with an equivalent and a half of crystallized bicyanide of mercury, in two successive experiments, residual masses were obtained, which, within a small fraction, had the weight which would have resulted from the union of an equivalent of calcium, with an equivalent of cyanogen. A portion of the compound thus made, was placed between electrodes of charcoal, the lower piece being excavated slightly to receive it, and the upper one being so shaped as to enter the cavity. The electrodes were severally supported by copper rods passing through stuffing boxes, so as to be included within a glass receiver, ground to fit air tight upon an extra air-pump plate. In consequence of this arrangement, the receiver could be exhausted of air, and the electrodes consequently situated in vacuo, or in an atmosphere of hydrogen, as might be deemed preferable. The lower electrode formed the cathode, the upper the anode, of two hundred pairs, each comprising one hundred square inches of zinc surface. Under these circumstances, when the circuit was completed, by throwing the usual charge of acid upon the plates, the most intense

ignition ensued. The supposed compound of cyanogen appears to be an excellent conductor, and nothing could exceed the splendour of the purple light emitted during its deflagration. It was too vivid, however, for more than a transient endurance by an eye unprotected by deep coloured glasses. After the compound was adjudged to be sufficiently deflagrated, and time had been allowed for refrigeration, on lifting the receiver, masses were found upon the coal, which had a metallic appearance, and which, when moistened, produced an effluvium, of which the smell was like that which had been observed to be generated under like circumstances, by the siliciuret of potassium.

Similar results had been attained by the deflagration, in a like manner, of a compound procured by passing cyanogen over quicklime, enclosed in a porcelain tube heated to incandescence.

Phosphuret of calcium, when carefully prepared, and subsequently well heated, was found to be an excellent conductor of the voltaic current, evolved from the apparatus abovementioned. Hence it was thought expedient to expose it in the circuit of the deflagrator, both in an atmosphere of hydrogen, and in vacuo. The volatilization of phosphorus was so copious as to coat throughout the inner surface of the glass receiver, with an opake film, in colour resembling that of the oxide of phosphorus, generated by exposing this substance under hot water, to a current of oxygen.

The phosphuret at first contracted in bulk, and finally was for the most part volatilized. On the surface of the charcoal adjoining the cavity in which the phosphuret had been deflagrated, there was a light pulverulent matter, which, thrown into water, effervesced, and when rubbed upon a porcelain tile, appeared to contain metallic spangles, which were oxidized by the consequent exposure to atmospheric oxygen.

In one of Dr. Hare's experiments with the apparatus described, portions of the carbon forming the anode appeared to have undergone complete fusion, and to have dropped in globules upon the cathode.

When rubbed, these globules had the colour and lustre of plumbago, and by friction on paper, left traces resembling those produced by that substance. They were insusceptible of reaction with chlorohydric or nitric acid, or with aqua regia. They were not, in the slightest degree, magnetic.

About 1822, Professor Silliman had obtained globules which were by him considered as fused carbon, by others were deemed to be de-

positions of carbon carried from one electrode to the other. Professor Silliman had at that time sent Dr. Hare several nodules for examination, of which none, agreeably to his recollection, appeared so much like products of fusion as those lately obtained.

Formerly, plumbago had been considered as a carburet of iron, but latterly, agreeably to the high authority of Berzelius, should be viewed as carbon holding iron in a state of mixture, and not in that of chemical combination. It would not then be surprising, if the globules in question furnished an instance of the conversion of charcoal into plumbago.

Since the abovementioned experiments were made, Dr. Hare has had reason to believe that the compound obtained as above described, by heating lime with bicyanide of mercury, contains fulminic acid, or an analogous substance. The compound being dissolved in acetic acid, and the filtered solution subjected to nitrate of mercury, a copious white precipitate resulted. This being desiccated, proves to be a fulminating powder. It explodes between a hammer and anvil like fulminating mercury, or rather with the sharp sound of fulminating silver.

Dr. Hays made a verbal communication of a case of the application of the catoptric method of examining the eye, by which he had detected the destruction of the lens and of its capsule, under circumstances which would not otherwise have led to the conclusion that they had been destroyed, and where vision had been obtained by the use of a cataract lens.

Stated Meeting, June 21.

Present, twenty-four members.

Mr. Du Ponceau, President, in the Chair.

The following donations were received:—

FOR THE LIBRARY.

Proceedings of the Royal Astronomical Society. Vol. IV. Nos. 1 to 21, and No. 23. London, 1839.—*From the Society.*

Reports of the Geological Survey of the State of New York. Albany, 1839.—*From Mr. Z. Barton Stout.*

Notice Historique sur la Vie et les Voyages de Réné Caillié. Par M. Jomard. Paris, 1839.—*From the Author.*

Remarks upon the North American Insects belonging to the Genus Cychrus of Fabricius; with descriptions of some newly detected species. By T. W. Harris, M. D. Boston, 1839.—*From the Author.*

Political Sketches of Eight Years in Washington. By Robert Mayo, M. D. Baltimore, 1839.—*From the Author.*

Minutes of the Provincial Council of Pennsylvania. From the Organization to the Termination of the Proprietary Government. Vols. I. and II., containing the Proceedings of Council from 1683 to 1717. Harrisburg, 1838.—*From the State of Pennsylvania.*

Die Werke des Flavius Josephus und Das Leben des Josephus von ihm selbst geschrieben. Das Ganze von Neuem nach dem Griechischen bearbeitet; mit erklärenden Anmerkungen, durch C. R. Demme. Philadelphia, 1839.—*From the Editor.*

Annales des Mines. Troisième Série. Vol. XIV., parts fourth and sixth. Paris, 1838.—*From the Council of Mines.*

Storia della Scultura del Conte Cicognara. Vols. I. to VII. Prato, 1824.—*From Mr. John Vaughan.*

Recherches sur l'Histoire Naturelle et l'Anatomie des Limules, par J. Van Der Hoeven. Leyden, 1838.—*From the Minister of the Interior of the Netherlands.*

Flora Batava, of afbeelding en beschrijving van Nederlandsche Gewassen, door Jan Kops, en H. C. Van Hall. Nos. 116 and 117. Amsterdam.—*From the same.*

Essay on Meteorological Observations. By J. N. Nicollet, Esq. Printed by order of the War Department. Washington, 1839.—*From Col. Abert, U. S. Topographical Engineers.*

Les Trois Ages ou les Jeux Olympiques, l'Amphithéatre, et la Chevalerie. Par Roux de Rochelle. Paris, 1838.—*From the Author.*

Fernand Cortès, Poëme. Par Roux de Rochelle. Paris, 1838.—*From the same.*

Chinese Magazine, edited by the Rev. Charles Guzlaff. Canton.—*From the Editor.*

Missionary Tracts in Chinese. Canton.—*From the same.*

Bulletin de la Société de Géographie. Deuxième Série. Vol. X. Paris, 1838.—*From the Society.*

The Oxford University Calendar. Oxford, 1838.—*From Mr. John Vaughan.*

The Cambridge University Calendar. Cambridge, 1838.—*From the same.*

Memorie e Lettere di Galileo Galilei, dal Cav. Giambatista Venturi. Vols. I. and II. Modena, 1821.—*From the same.*

An Inquiry into the Origin of the Antiquities of America. By John Delafield, Jr., with an Appendix, by James Lakey, M. D. of Ohio. New York, 1839.—*From Mr. M. T. Williams.*

The librarian was authorized to take order in relation to an exchange of the transactions of the Society, for the Journal of the Boston Natural Historical Society.

The committee on the letters of Mr. J. P. Hulliken and Dr. Townsend reported, and was discharged.

The committee to whom was referred the publication of certain meteorological tables, accidentally omitted in their place in the Transactions, and the journal of Dr. Thomas Hewson, reported in favour of the publication of certain of the former and of the latter.

Dr. Bache presented a translation of an obituary notice of Professor Rask of Copenhagen, late a member of the Society, to be deposited in the archives of the Society.

Mr. Vaughan informed the Society of the decease of Doctor Thomas Cooper, a member of the Society, who died on the eleventh of May last.

Dr. Hays communicated verbally the case of a woman labouring under an affection of the optic nerve, in which a defect in the recognition of colours was developed, according to her statement, at the same time with the affection of the general vision, and in which a partial recovery of the power of vision had been attended with the recovery of the power to distinguish colours.

Dr. Hare laid before the Society portions of barium, strontium and calcium, and stated the considerations which led him to attempt their extrication, and the means by which he had

succeeded. These communications it is not deemed expedient to insert, as the whole process will soon be presented for publication in the Transactions of the Society, when an abstract will be given. Meanwhile, a notice of the results will appear in Silliman's Journal.

One of the copies of the Colonial Records, presented to the Society by the Legislature of the State, was offered to the acceptance of the President, Mr. Du Ponceau.

The thanks of the Society were returned to Mr. George Ord, for his attention to their request in relation to the purchase of books while abroad.

Stated Meeting, July 17.

Present, twenty-two members.

Mr. Du Ponceau, President, in the Chair.

The following donations were received:—

FOR THE LIBRARY.

Proceedings of the Geological Society of London. Vol. II. and Vol. III. Nos. 59 to 62 inclusive. London, 1838 and 1839. *From the Society.*

Proceedings of the Numismatic Society. 1836–37. London, 1837. *From the Society.*

The Institutes of the Numismatic Society of London. London, 1838. *From the same.*

A Discourse on the Life and Services of Stephen Van Rensselaer. By Daniel D. Barnard. Albany, 1839.—*From the Albany Institute.*

Mémoires de la Société Royale des Antiquaires de France. Vol. XIV. Paris, 1838.—*From the Society.*

Tijdschrift voor Natuurlijke Geschiedenis en Physiologie. Uitgegeven door J. Van der Hoeven, M. D. Prof. te Leiden en W. H. de Vriese, M. D. Prof. te Amsterdam. Vol. V. No. 4. Leyden, 1839.—*From the Minister of the Interior of the Netherlands.*

Sur les Avantages qu'on pourrait tirer de la Lecture des Anciens Écrivains Français. Par Théod. Lorin. Cambray, 1839.—*From the Author.*

Épitres, Fables et Poésies Fugitives. Par Théodore Lorin. Paris, 1839.—*From the same.*

A Report upon the Military and Hydrographical Chart of the Extremity of Cape Cod. By James D. Graham, Major U. S. Corps of Topographical Engineers.—*From the Author.*

Chronometer Accuracy. Verification of the Longitude of Paris. London, 1839.—*From Dr. Lee.*

Letter to the Secretary of the Treasury on the History and Causes of Steamboat Explosions and the means of prevention. By W. C. Redfield. New York, 1839.—*From the Author.*

The English Instructor. In the Burman Language.—*From the Rev. J. P. Engles.*

Jeremiah, in the Persian Language.—*From the same.*

Harmony of the Gospels, in the Choctaw Language. Utica, 1831. *From the same.*

Novum Testamentum ad Exemplar Millianum. Editionem Primam Americanam recensuit Josephus P. Engles, A. M. Philadelphia, 1839.—*From the same.*

Sermones Pomerii fratris Adelbarti de Themeswar. Hagenau, 1498. *From the same.*

Observations Météorologiques et Magnétiques faites dans l'Étendue de l'Empire de Russie, rédigées et publiées par A. T. Kupffer. St. Petersburg, 1837.—*From the Author.*

Documents of the Kentucky Legislature. Session of 1837–38.—*From Mr. Edward Jarvis.*

Report of the Board of Internal Improvement of Kentucky, 1837.—*From Mr. E. Whittlesey.*

The Statutes of Ohio and of the North Western Territory. Vols. I., II., and III. Edited by Salmon P. Chase. Cincinnati, 1833. *From Mr. M. T. Williams.*

An Account of the Receipts and Expenditures of the United States, for the Year 1837. Washington, 1838.—*From the Treasurer of the United States.*

Boston Journal of Natural History. Vol. II. Nos. 1 and 2. Boston, 1838 and 1839.—*From the Boston Society of Natural History.*

The American Medical Library and Intelligencer. Edited by Robley

Dunglison, M. D. Vol. III. Nos. 2 to 8. Philadelphia, 1839. *From the Editor.*

The American Journal of Science and Arts. Conducted by Benjamin Silliman, M. D. LL. D., aided by Benjamin Silliman, Jr., A. B. January to July, 1839. Vol. XXVI. New Haven, 1839.—*From the Conductors.*

The Transylvania Journal of Medicine and the Associate Sciences. Vol. XII. No. 1. Lexington, 1839.—*From the Conductors.*

The Committee on the observations of the Solar Eclipse of May 14–15, 1836, reported, and their report was ordered for publication.

The American observations, 28 in number, were given at length. At the invitation of Mr. C. Rumker, Director of the Hamburg Observatory, conveyed through Prof. A. D. Bache, 21 of these observations had been forwarded by Mr. John Vaughan to that distinguished Astronomer, for comparison with those which had been made in Europe. The report contained a letter from Mr. Rumker, in which the time of ecliptic conjunction, with its variations for the small errors of the tables, was deduced from each of the European and American observations. Mr. Rumker remarks, that the corrections of this time for the corrections of the moon's declination and parallax, appearing with opposite signs in the observations on the two continents, afford unusual facilities for determining these corrections, particularly the latter. Mr. Rumker's letter not having given the final results deducible from his equations of condition, the committee appended a letter from Mr. Sears C. Walker, in which he deduces from Mr. Rumker's equations, the following corrections of the solar and lunar elements, as given in the N. Almanac.

$d(\odot + \mathbb{D}) = -2''.279$ = correction of sum of semidiameters.
$d(\odot - \mathbb{D}) = -1''.750$ = „ difference of semidiameters.
$d\beta = -6''.736$ = „ moon's latitude.
$d\pi = +1''.516$ = „ moon's parallax.
$d\lambda = -2''.276$ = „ moon's longitude.

These corrections being referred to the moon's orbit and its secondaries, give, after Bessel's notation (Astr. Nachr. 320.)

$\epsilon = -2''.934$ = cor. moon's place in true orbit.
$\zeta = -7''198$ = „ on secondary to do.

Mr. Peters, (Astr. Nachr. 326) without the American observations, had obtained.

$\epsilon = -3''.650.$
$\zeta = -5''.472.$

Mr. Walker having previously reduced the American observations with Peters's co-ordinates and corrections, furnishes a comparison of the longitudes from Greenwich, derived by different computers from this eclipse.

	Walker from Rumker's equations.			Walker from Peters' co-ordinates.		
	h.	m.	s.	h.	m.	s.
Washington (Capitol,) - - - - - -	5	8	13.83	5	8	13.45
Haverford School, Delaware Co., Pa. - -	5	1	16.53	5	1	15.05
Germantown, C. Wister's private Observatory,	5	0	40.61	5	0	40.94
Philadelphia, (State House) - - - - -	5	0	38.89	5	0	39.60
West Hills, (Coast Survey,) - - - - -	4	53	41.11	4	53	42.05
Southwick, Mass., A. Holcombe's p. Obs. -	4	51	12.89	4	51	13 25
Providence, Brown University, - - - -	not reduced.			4	45	38.33
Dorchester, Mass., Wm. C. Bond's p. Obs. -	„			4	44	16.92

Mr. Walker finds from the resolution of Rumker's equations of condition, + 1″.516 for the correction of Burckhardt's constant of the moon's equatorial parallax. In the Memoirs of the Astronomical Society, Vol. X., Mr. Henderson gives + 1″.5 as the value of this correction, derived from Plana's *Théorie de la Lune*, and + 1″.3 as the value of the same, derived from a discussion of all the meridian observations of the moon made in 1832 and 1833, with the mural circles at Greenwich, Cambridge, and the Cape of Good Hope. This correction had hitherto been derived chiefly from theory and meridian observations. It is seldom that an eclipse or occultation has been so extensively observed as to furnish a determination of this element. In the present instance, the results by the three independent methods, present a close agreement.

Dr. Chapman, one of the Vice-Presidents of the Society, stated that he had received a letter from the Prince of Musignano, informing him that a meeting of the scientific men of Italy would be held at Pisa, in October next, and inviting the Society to send a delegate to the meeting.

Dr. Patterson communicated the decease of Mr. Francis Nichols, a member of the Society, on the 7th of July.

Dr. Bache also announced the decease of Dr. John Newnam, formerly of Salisbury, N. Carolina, a member of the Society.

The following candidates were declared duly elected members of the Society:—

Theod. Romeyn Beck, M. D., of Albany.

Richard C. Taylor, of Philadelphia.

Stated Meeting, August 16.

Present, sixteen members.

Dr. PATTERSON, Vice-President, in the Chair.

The following donations were received:—

FOR THE LIBRARY.

Documents of the Second Session of the Twenty-fifth Congress, 1837–38. Twenty-four volumes. Washington, 1838.—*From John Forsyth, Secretary of State of the United States.*

Chart of Georges Shoal and Bank. Surveyed by Charles Wilkes, Lieutenant Commandant, 1837.—*From the same.*

A Narration of the Mission of the United Brethren among the Delaware and Mohegan Indians, from 1740 to 1808. By John Heckewelder. Philadelphia, 1820.—*From Mr. P. S. Du Ponceau.*

Johann Heckewelder's Nachricht von der Geschichte, der Sitten, und Gebräuchen der Indianischen Völkerschaften. Aus den Englischen übersetzt, von Fr. Hesse. Nebst einem Zusatze von G. E. Schulze. Göttingen, 1821.—*From the same.*

A Report on the Geological Survey of Connecticut. By Charles U. Shepard, M.D. New Haven, 1837.—*From Professor Silliman.*

Suggestions relative to the Philosophy of Geology. By Professor B. Silliman. New Haven, 1839.—*From the same.*

Catalogus Senatûs Academici, in Collegio Yalensi. New Haven, 1838.—*From the same.*

Catalogue of the Library belonging to the Society of Brothers in Unity of Yale College. New Haven, 1838.—*From the same.*

Catalogue of the Library of the Linonian Society, Yale College. New Haven, 1837.—*From the same.*

Catalogue of Books in the Library of Yale College. New Haven, 1823.—*From the same.*

A New Dictionary of Medical Science, second edition. By Robley Dunglison, M. D. Philadelphia, 1839.—*From the Author.*

A Manual of Conchology. By Thomas Wyatt, M.A. New York, 1838.—*From the Author.*

Sur la Possibilité de Mesurer l'Influence des Causes qui modifient les Élémens Sociaux. Par A. Quetelet. Brussels, 1832.—*From the Author.*

Observations horaires faites au dernier Solstice d'Hiver, 1837. Par M. Quetelet.—*From the same.*

Note sur le Magnétisme terrestre, suivie des Résultats des Observations Météorologiques horaires faites à Bruxelles à l'Équinoxe du Printemps de 1838, et à l'Époque du Solstice d'Été de 1838. Par A. Quetelet.—*From the same.*

A Universal History, in Chinese, accompanied by a Map of both Hemispheres. By the Rev. Charles Guzlaff. Canton, 1838.—*From the Author.*

Jahrbücher der Literatur. Vols. 77 to 80 inclusive. Vienna, 1837. *From Baron von Hammer Purgstall.*

Moral Reflections on the actual Condition of the Animal Kingdom. By T. Forster. Brussels, 1839.—*From the Author.*

Outlines of Physiology, with an Appendix on Phrenology. Philadelphia, 1839.—*From Dr. Dunglison.*

The Colonial Policy of Great Britain. London, 1816.—*From Mr. John Vaughan.*

Notes on the Medical Topography of the interior of Ceylon. By Henry Marshall. London, 1821.—*From the same.*

Jay's Treaty, with an Appendix. Philadelphia, 1795.—*From the same.*

A Practical Treatise on Rail Roads and Carriages. By Thomas Tredgold. New York, 1825.—*From the same.*

Memoirs of the Rev. David Brainerd, Missionary to the Indians. By S. E. Dwight. New Haven, 1822.—*From the same.*

Compendio das Eras da Provincia di Para. Por A. L. M. Baena. Para, 1838.—*From the Author.*

Magazine of Natural History. Edited by Edward Charlesworth. Vol. II. New Series. Nos. 26, 27, 29, and 30. London, 1838.—*From the Editor.*

The American Journal of the Medical Sciences. Edited by Isaac Hays, M.D. No. XLVIII, for August. Philadelphia, 1839.—*From the Editor.*

A communication from the Academy of Natural Sciences, was received, under date of the 23d of July, relating to a pro-

posed National Museum in connexion with the Smithsonian legacy. Whereupon, it was

Resolved, That the Academy of Natural Sciences be respectfully informed that their communication has been carefully considered by the American Philosophical Society, and that the Society has to regret that in view of the indirect and unofficial manner in which the wishes of one of the members of the Government at Washington has been conveyed to them, respecting the disposition of the Smithsonian legacy, the Society does not feel at liberty, at the present time, to take action upon this subject.

A communication from the foreign Secretary of the Royal Society of London, in relation to magnetic observations, was referred to the astronomical committee.

Dr. Dunglison described the appearances which he had witnessed, in company with Professor Silliman, after the tornado of the 31st ultimo, at New Haven. The evidences appeared to him to favour the idea of a gyratory motion. The direction of the storm was from south-west to north-east.

Mr. Justice described a similar tornado which had occurred on the same day, fifteen miles north of Philadelphia, showing evidence, in his opinion, of a similar movement of gyration.